

EXPLANATION OF PLATE I.

- Fig. 1. A magnified cell of *Zygnema nitidum*; exhibiting the structure of the central cytoblast prior to the cessation of the growth of the species, the tubular connexion between the zoospores, and other points in the anatomy of the *Zygnemata*.
- Fig. 2 & 3. give the appearances of the cytoblast subsequent to that epoch, and to the removal of the radii.
- Fig. 4 & 5. show the structure of the joints in *Zygnema quadratum*; a similar formation existing in a considerable number of *Zygnemata*.
- Fig. 6. represents a filament of *Vesiculifera capillaris* prior to the assumption of the characters of reproduction.
- Fig. 7. The species in its perfect condition.
- Fig. 8. The vascular connexion between the zoospores taken from *Conf. crispata*.

III.—*The Birds of Ireland.* By WM. THOMPSON, Esq.,
Pres. Nat. Hist. Society, Belfast.

[Continued from vol. xi. p. 290.]

THE RED GROUSE—*Tetrao Scoticus*, Lath.—is common to heathy tracts of every altitude, from the low bog, which is barely elevated above the sea, to the summits of the mountains throughout Ireland, and the adjacent islets. In the most favoured localities the species is as plentiful as in the Highlands of Scotland; but our moors, instead of being let as in that country to the highest bidder, are, with rare exceptions, reserved by the proprietors for their own, or their friends' shooting*.

On the range of the Belfast mountains, rising to nearly 1600 feet in altitude, the grouse still maintains its ground, and in the evenings of summer and autumn, when taking a favourite walk to the mountain-ridge to behold the grand and varied prospect on every side, and above all, to watch the down-going of the sun behind the distant mountains on the farther side of Lough Neagh, and see the vast expanse of waters steeped in the most lovely hues, the crowing of the grouse has almost invariably enlivened my walk home. To my ear the call is delightful, from its association with the wildness of nature. When undisturbed at such times, the alarm note well known to sportsmen as a repetition of "the syllable *kok*" was rarely heard, but the crowing—which is admirably represented by the words "*go, go, go, go, go-back, go-back*"—is

* It has been remarked to me that the grouse of Ireland and Scotland differ in size and colour; but this, though apparently correct when birds of a certain district are compared with those of another, I consider to be a partial view, for in different localities throughout either Scotland or Ireland birds will be found equally to vary in these respects.

† Macgillivray's 'Brit. Birds,' vol. i. p. 181, where it is added that "the Celts naturally imagining the moor-cock to speak Gaelic, interpret it as signifying *co, co, co, co, mo-chlaidh, mo-chlaidh*—that is, *who, who* (goes there?) *my sword, my sword!*"

continued for a long time, commencing in the month of September about half an hour after sunset. From about the same spot I have heard this call on many evenings, thus indicating the partiality of these birds to a favourite roosting-place. During one of these walks in the month of June, a pointer-dog was inconsiderately allowed to follow me, and by his trespassing on the breeding haunts of the grouse, lapwing, and snipe, caused a continued uproar from the three species, akin to that produced by birds on the sea-shore.

The grouse breeds very early. On the 17th of March a sporting friend once found a nest on the Belfast mountains, containing eleven eggs. When hare-hunting here so late as the middle of April, I have more than once, to my great regret, seen the pack of hounds come upon the nest, and set to work so quickly, that every egg was devoured before they could possibly be whipped off. Fortunately, this bird breeds a second time, if the first nest be destroyed.

For the fact that grouse is a good bird for the table, we have no less an authority than that of the illustrious John Locke! In the life of this philosopher by his descendant, Lord King, are directions, &c. from Locke, apparently addressed to some foreigner about to visit England, one sentence of which is—"Railes and *heath-polts*, ruffs and reeves, are excellent meat wherever they can be met with."—Page 134.

The grouse is occasionally subject to variety in colour. One shot in November 1826 by the Rev. Lord Edward Chichester, near Doagh, in the county of Antrim, was pure white, with the exception of the two outer primaries, and an equal number of the feathers of the greater wing-coverts, which remained unchanged. It was a large and healthy-looking bird.

My friend John Sinclair, Esq. of Belfast, who has been a regular grouse-shooter for upwards of sixty years, states that about Ballantrae, in Ayrshire, he has found grouse in stubble and in grass fields a mile distant from the mountain heath, and has sprung them from the heath in plantations of young trees about fifteen feet in height. He considers that the scarcity of grouse in many places is owing to the increase of sheep pasturing. The nests of this bird are trodden on by the sheep, and the burning of the heath on their account, even if practised at a proper season, deprives the grouse of shelter for some years, and not very unfrequently, by being carried into execution in the early spring, destroys their eggs. Where horned cattle are pastured, he considers grouse to be as numerous as ever. The black grouse, by nestling in marshy places, is not subjected to the casualties just noticed, and hence one reason of the decrease of the former, and increase of the latter, in some districts.

On looking to the food contained in grouse when their favourite berries were not to be had, I have found it to be chiefly the tops of heath, with occasionally the stem of the bilberry (*Vaccinium Myrtillus*). On opening the intestines of a diseased grouse, shot on the 14th of August at Ballantrae, (but which had been wounded perhaps three weeks before,) I found them nearly full of tape-worms (*Tenia*). Its gizzard was entirely filled with the fruit of the *Empe-*

trum nigrum, there called heather-berry. My friend just alluded to has frequently found oats in the crops of grouse killed in the last-named locality.

THE CAPERCAILZIE OR WOOD GROUSE—*Tetrao Urogallus*, Linn.—has unfortunately long been extinct in this country. Giraldus, in his ‘Topographia Hibernica,’ states, that this species (called by him *Pavo sylvestris*) was more common in Ireland than the red grouse, about the twelfth century. When the island was covered with native woods one can imagine that it may have been so, but even if less abundant, the nature of its haunts might cause it to be more frequently met with than the red grouse, and consequently its being considered more common. The Irish statutes 11 Anne, ch. 7, recite, “that the species of cocks of the wood* (a fowl peculiar to this kingdom) is in danger of being lost,” and prohibits the shooting of them “for seven years.” Smith, in his ‘History of Cork’ (1749) observes, that “it is now found rarely in Ireland, since our woods have been destroyed.” Rutty, in his ‘Natural History of Dublin’ (1772), mentions that “one was seen in the county of Leitrim about the year 1710, but they have entirely disappeared of late, by reason of the destruction of our woods.”—*Vol. i. p. 302.* Pennant, in his ‘British Zoology’ (1776), states that “about the year 1760 a few were to be found about Thomastown, county of Tipperary.” The 27th Geo. III. “prohibits killing moor game, heath game, grouse, pheasant, partridge, quail, land rail, and *wild turkey*, between the 10th of January and 1st of September†.” Whether by wild turkey the wood grouse is meant, may perhaps be considered uncertain. There is no uncertainty, however, in the following instance. From the Rev. Mr. Dubourdien’s ‘Survey of the County of Antrim,’ published in 1812, we learn that “wild turkeys are now nearly extinct, though once in such numbers at the former place [Portmore]; the breed, *the true copper colour, with red legs*”!

BLACK GROUSE, *Tetrao Tetrix*, Linn.—For a long period this fine bird has certainly not been a native of Ireland; and that it ever was so is at least doubtful. I have not met with any satisfactory evidence of its being indigenous. Smith, in his ‘History of Waterford’ (1745), remarks—“It is uncertain if we have not the *Urogallus minor*, Raii, viz. the heath-cock or grouse of Willoughby, which I take to be the black game of England, and is also an inhabitant of the mountains.”—*Page 336.* The same author in his ‘History of Cork’ says of “The black grouse (*Tetrao seu Urogallus minor*):—This species is frequent, and needs no particular description. It

* Willoughby (1678) observes, “This bird is found on high mountains beyond seas, and as we are told in Ireland (where they call it Cock of the Wood), but nowhere in England.”

He concludes his description thus: “The flesh of this bird is of a delicate taste and wholesom nourishment, so that being so stately a bird, and withal so rare, it seems to be born only for princes and great mens tables.”!

† For these extracts from the Irish Statutes I am indebted to Francis Whitla, Esq.

inhabits mountains, and is rarely seen in lower heath grounds. The cock is almost black, but the female is coloured like a woodcock or partridge." Were this description taken from native birds it would be decisive as to the species, but it may quite as probably have been copied from some descriptive work*. Mr. Templeton states, that he had heard from excellent authority, that "black game is mentioned in some of the old leases of the county of Down," but proof that the *Tetrao Tetrix* was the bird so alluded to, and did exist there, is still wanting. Pennant, in his 'British Zoology' (1776), remarks, that "some have been shot in Ireland, in the county of Sligo, where the breed was formerly introduced out of Scotland, but I believe that at present the species is extirpated."

That when Ireland abounded in natural wood, many portions of the island may have been well-suited to the abode of the black grouse, does not I conceive admit of any doubt; but, again, we know not whether Great Britain may not geographically have been, within its latitude, the extreme western range of the species. I have not seen any record of its being met with west of Great Britain, in any latitude†. Since the period mentioned by Pennant, this species has been introduced into different parts of Ireland, and being turned out, lived occasionally for some years, but I am not aware of its having bred in any instance. There are in the county of Antrim, just opposite to the favoured haunts of this bird in Scotland, localities which seem in every natural feature well-suited to the black grouse. To two of these places, "Claggan," the property of Viscount O'Neil; and Glenarm deer-park, belonging to Edmund McDonnell, Esq., this bird has been introduced with the following success. I leave the respective game-keepers, both very intelligent men, and the best "authorities" on the subject, to speak for themselves. C. Redmond, gamekeeper at Claggan, informed me by letter dated January 1, 1841, as follows:—

"Twelve years ago (two years previous to my coming here) there were four brace of black game turned out, a cock and hen of which I frequently met with outside the plantations in the heath, my pointer dogs setting them like grouse. They were never to be seen together, but kept a mile separate, and each of them always about the same place: the hen I found dead three years ago, and supposed her to have been shot at by a party which Lord O'Neil had here at that time. The cock has left us or been killed also. I saw a cock that was shot last year at Glenariff near Cushendall, [some miles distant] which may have been the same. I was at the letting out of nine black game in 1832 in this place, and a single

* Since this was written, I have had the opportunity of consulting Wil-
loughby's 'Ornithology,' and find that Smith borrows his description of the
birds and their haunts from that work.

† The proximity of Ireland to Great Britain may be considered an ob-
jection to this view by those who have not looked to the distribution of the
Vertebrata of the two islands. In the introduction to the Report on the
Fauna of Ireland, (published in the 'Reports of the British Association for the
Advancement of Science' for 1840,) remarks upon this subject will be found.

bird of them I never saw afterwards; the reason I cannot assign, it might be that they were hurt in coming from Scotland and died, or wandered away, which I believe they are prone to do."

John Inglis, gamekeeper at Glenarm Park, replied to some queries on this subject in the following words in January 1841.

"In reply to your note regarding black game, I am sorry I cannot give you a very flattering account of them. There has been one black cock here about four years. I have not seen him for the last four or five weeks, but I suppose him to be still alive. I think it is likely he came from Claggan, as I believe Lord O'Neil turned out some there shortly before the bird was seen here. [The places are about fifteen miles apart.] At the beginning of August 1839, I went to Scotland and got nine young birds at Douglas Castle; two of them died on the passage; I turned out the seven on the hill near the place where the old cock used to haunt, but none of them were ever seen afterwards that I know of. The reason I assign for their not succeeding at this time is, that I think they were too young, and not fit to manage for themselves without the help of the old bird. In November 1839, I again went to Douglas Castle, got six brace of full-grown birds, viz. seven hens and five cocks; I got them all safe over to Glenarm, where I kept them for two days, feeding them on corn till they recovered from the effects of the passage. I then turned them out in the park quite strong and healthy to all appearance. Some time after one of the cocks was found dead in the park; he was quite light and thin of flesh. One of the cocks was shot about the same time in Glenariff, about eight miles from Glenarm. A few of them kept about the park all winter. Sometimes one would be seen, sometimes two, and in the month of March there were three hens and one cock seen together, but about the beginning of May all the hens disappeared, and none of them have been seen since. One cock kept the park all summer, and was seen lately, which is all that I know of here, out of the twelve brought over. One cock was shot about two months ago by a gentleman near Ballycastle, [about twenty miles distant,] which is likely to be another of them. Where all the hens have gone to I cannot say. I am still in hopes that some of them may be alive yet, as they are so much like grouse that people who are not acquainted with them would take no notice of them.

"I now come to your last query, which is, *If they ever bred? and if they did not succeed, the reasons assigned for their not doing so?* Now I really confess I cannot assign any satisfactory reason whatever, as I have no doubt that full-grown birds would live as well in Ireland as they do in Scotland, if they were only let alone. What I am most doubtful about is, whether they will breed as well; and the reason I am doubtful about this is, that when I was in Scotland, keeper with Lord Douglas, at Douglas Castle, where black game are very plentiful, in hunting the dogs over the ground I used to find all the young broods of black game, *not among heath or moss ground where young grouse generally are, but on white or green ground, where sprat and rushes are plenty, and where you will seldom find young*

grouse. But when they get strong and able to do for themselves they get into packs, often to the number of forty or fifty, and fly over the whole country and take both to the woods and corn-fields—when at Douglas last I was talking to Lord Douglas's keeper about what he thought the young birds fed on. He said that early in the season he had caught some young birds, intending to tame them and learn them to feed, so that I might be better able to get them safe over, but they all died in a day or two. He cut open some of their crops to see what they fed on, and could observe nothing but the seed of the sprat or rush. Now, from the number of black cattle that are kept on the mountains in the north of Ireland, there is scarcely any sprat or rushes allowed to grow that would be of any use either for cover or food. I have seldom seen them sit when cattle go near them, and a crow flying over will make a score of them rise and fly away in the latter end of the season, when they are strong on the wing. With respect to the haunts and breeding-ground of young black game, I speak only from my own observations. I am not aware that they haunt the same kind of ground in other parts of the country, I merely wish to direct your attention to it. I know they are plenty in the island of Arran, but do not know what sort of ground they frequent there. As I mentioned before, none of the hens have been seen since the beginning of the breeding time: whether they began to hatch and were killed by some vermin, or wandered away in search of a more suitable place for their purpose, is a question I cannot answer. Lord Courtown's keeper was at Douglas Castle shortly after I was, in November 1839, and got away six brace to his lordship's estates somewhere south of Dublin, but I have not heard how they succeeded."

How different from this is the case at Ballantrae in Ayrshire, just opposite to Glenarm! When sporting there in 1839, I made the following note on the 20th of August, after returning from the first day's black game shooting.

"Within twenty years a black grouse was an extraordinary sight in the neighbourhood of Ballantrae in Ayrshire, and still later, not more than one or two individuals would be met with during a season's shooting. When first there, in the autumn of 1828, I saw numbers of these birds, chiefly about the corn-fields adjacent to the mountains, since which time they have been gradually increasing, and of late years have become abundant. This is doubtless attributable to the great increase of cultivation, or the growth of corn in the vicinity of the moors, for with its augmentation that of the black game has proportionally kept pace—within the period alluded to a vast quantity of mountain-land has been brought under cultivation in this district.

"In grouse ground we met with two or three small packs of black game today, but one pack was quite below the moor, and on looking to the crop of a young cock killed there, I found it filled with the flowers of all the plants which grew around—amongst them were those of *Euphrasia*, *Ranunculi*, *Cerastia*, *Carices*, but in quan-

tity much exceeding the others were those of the autumnal hawk-bit, *Apargia autumnalis*—to my veteran companion, who has shot here successively for about twenty seasons, this plant has long been known as a favourite food of the young black game—in addition to the flowers, were many leaves of a small willow, every one of which taken from the bird was infested with an insect nidus. It is in the evening chiefly that the black grouse resorts to the corn-fields, and this it does when the grain is green, as well as when ripe. Both black and red grouse killed late in the autumn, and in the course of the day, are not unfrequently found, when opened, to contain oats exclusively, which in such cases have been purloined in the early morning*. The farmers in this part of Ayrshire often complain of the damage done to their crops by these birds, especially by the black grouse. In reference to the common error that this bird increases at the expense of the red game, it may be stated that in this country the numbers of the latter have in consequence suffered no diminution." In the autumn of 1837 my friend first saw the hens of the black game packed, when fourteen and fifteen appeared together. He has seen as many as seventy black cocks in company.

The following instance of the carriage of the eggs of the black grouse to a considerable distance with perfect safety after their having been partly incubated, seems to me very interesting. In June 1833, Mr. Arbutnot Emerson of Belfast had brought to him from Stranraer nine eggs taken from the nest of a black grouse. These eggs were placed under a bantam hen, and in one week, seven young birds made their appearance. Two of them soon died, but the remaining five lived for about a month, or until cold and wet weather set in, when they all died. The eggs were packed in feathers, and brought by the mail-coach from Stranraer to Portpatrick, where they were shipped on board the steam-packet, put into the mail again at Donaghadee, and in about twelve hours after being taken from the nest were placed under the bantam hen. On the same subject I have learned from Wm. Sinclaire, Esq., respecting a nest of partridge's eggs once brought to him from a distance of eight miles, that they were quite cold when received, but being placed under a common hen, the young birds came out in half the usual time, thus showing, that eggs when half incubated can be carried to a distance without their vitality being impaired. The same gentle-

* Mr. Colquhoun, in his work entitled 'The Moor and the Loch,' states, from the circumstance of heather never having been found in any black grouse opened by him, that the species never eats it; but this will not apply generally, as proved in the case of birds examined by myself. Examples shot in Scotland, and set up by bird-preservers in Belfast are alluded to, as the contents of their gizzards only have I noted down. They were five in number, and killed in the months of October, November, and January. The first contained oats and the tops of heath, which had given a pink tinge to the grain; the second, the twigs of heath and other plants; the third, a quantity of oats; the fourth, portions of a woody plant, perhaps heath; the fifth was, excepting many pebbles, entirely filled with yellowish green woody matter, consisting in part, if not altogether, of the bilberry plant (*Vaccinium Myrtillus*),—they all contained many pebbles.

man informs me, that having once "set" nine eggs of the domestic hen, he by mistake, at the expiration of two, instead of three weeks, went to examine them, and lifting each egg shook it violently, to ascertain if it were addled. He concluded that all were in this state, and thought no more of the matter until a week afterwards, (the twenty-one days having expired,) when the hen appeared strutting about with seven or eight chickens; the violent shaking in this instance of eggs two-thirds incubated did not injure the contained chick. Mr. Sinclair has known his tame pigeons remain off the nest all night when their eggs were half incubated, and though, as in the case of those of the partridge, they felt quite cold, no injury arose from this circumstance.

PTARMIGAN, *Tetrao Lagopus*, Sabine.—As remarked by me elsewhere, "the *T. Lagopus* is not now, nor do I conceive ever was, indigenous to this island. There seems not to be in any part of Ireland a continuity of mountains of sufficient altitude to be suited to the ptarmigan's abode." This species is known to so few persons, that the following note may perhaps be worth insertion.

"Dec. 1835.—My relative Robert Langtry, Esq. (of Fortwilliam, Belfast,) informs me that when at shooting quarters last autumn in Ross-shire—on the banks of the Beulay, and close to Loch Monar—he on several days shot four or five brace of ptarmigan. When his dogs pointed and the birds were but a few yards distant, so great was their assimilation in colour to the surrounding rocks, that he could not distinguish them so long as they remained motionless. They soon, however, stretched their necks and *walked* off before the dogs, and on being further disturbed took wing, but only to alight like a flock of pigeons on the tops of the adjacent stones. My friend verifies the accounts of their being easy of access, but states that, like other game, they are wild when the ground is wet."

[To be continued.]

IV.—*On the existence of Siliceous? Spiculæ in the exterior rays of Actinia.* By G. W. BAILEY, Prof. Chem. Min. and Geol. U. S. Military Academy*.

DURING a recent visit to Boston in April, I eagerly embraced the long-wished-for opportunity to examine the marine siliceous infusoria of our coast; for I hoped to be able to detect, in a living state, some of those elegant forms which occur so abundantly in the fossil infusorial strata of the marine tertiary of Virginia. I was aware that Ehrenberg had detected many of these forms in a living state in the sea at Cuxhaven and elsewhere, and I felt confident that our shores must abound in similar forms. In company with Dr. Gould, I visited the docks near the Chelsea ferry, and collected from the immersed logs, &c. a quantity of filamentous algæ, among which I knew that many of the objects of my

* From the Boston Journal of Natural History, vol. iv. No. 2.